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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SIDDIQUEE, MUHAMMAD S	
ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,596	ZHANG, XINGE	
	Examiner	Art Unit	
	MUHAMMAD SIDDIQUEE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's amendment filed on 12/1/2008 was received. Claims 8 and 12-15 are amended.

Response to Arguments

1. Applicant's arguments, see page 5, filed on 12/1/2008, with respect to the rejection(s) of amended claim(s) 8 under 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of previous references. The Schmidt reference no longer anticipates applicants amended claim 8, however, the fuel cell stack, interconnect, the contact materials and the number of layers of contact materials still read on claim 8. The only difference is the position of the layers i.e. claim 1 recites that coarse particle layer is sandwiched between other two fine layers but the Schmidt reference teaches that the coarse particle layer is one of the outer layers of the three layers. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to the sequence of layers, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse, 181 F.2d 1019, 86 USPQ 70.*

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 8-11, 13-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (DE 19627504) (This is a foreign reference and the examiner relies on verbal translation).

Regarding claim 8, Schmidt discloses a fuel cell stack (2) comprising a plurality of planar interleaved fuel cells and interconnects (4) and comprising a contact layer (24) disposed between at least one electrode-electrolyte element (6) of a fuel cell and an adjacent interconnect (4), the contact layer (24) comprising two fine layers (28, 26) and a coarse layer (30) (stress relief layer) of electrically conductive ceramic material which are coarser than in the other fine layers layers. [see the figure; Abstract; column 4, lines 9-28, 58-62]. Schmidt discloses the claimed invention except for the position of the layers. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to the sequence of layers, since it has been held that rearranging

parts of an invention involves only routine skill in the art. *In re Japikse, 181 F.2d 1019, 86 USPQ 70.*

Regarding claim 9, Schmidt discloses that the stress-relief layer comprises coarse particles and the outer layers comprise fine particles. [column 4, lines 58-62]

Regarding claim 10-11, Schmidt discloses that the outer layers comprises particles having an average diameter of less than about 3 μm and the central layer comprises particles having a diameter of greater than about 3 μm which is a overlapping range of the applicant's "an average diameter of less than about 2 μm" and "a diameter of greater than about 2 μm"

Regarding claim 13, Schmidt discloses that the outer layers comprise Lanthanum cobaltate (LC) particles [column 4, lines 30-34].

Regarding claim 14, Schmidt discloses that the outer layers comprise fine cobaltate (LC) particles and the stress relief layer comprises lanthanum strontium manganite (LSM) particles [column 4, lines 30-34].

Regarding claims 16-17, Schmidt discloses that the layer of the contact material comprises a perovskite $LaCoO_3$ which can be written as the formula ABO_3 where A is a lanthanide (La); B is a transition metal (Co); and the perovskite is electrically conductive and has a coefficient of thermal expansion which closely matches that of the fuel cell [column 4, lines 30-39].

5. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (DE 19627504) (This is a foreign reference and

the examiner relies on verbal translation) as applied in claim 9 & 14 and in view of Tietz et al (US 2004/0047789 A1).

Regarding claims 12 and 15, Schmidt remains silent about disclosing lanthanum cobalt nickel oxide (LCN). However, Tietz discloses an electrically conductive contact material with improved sinterability for a fuel cell where the material is describe in a generalized formula as $A'_{1-x-y}\,A''_{x}\,B'_{1-a-b}\,B''_{a}\,B'''_{b}\,O_3$; Where A'=(Y, Sc, Ce, La, Pr, Nd, Sm, Eu, Gd); A"=(Mg, Ca, Sr, Ba); B'=(Mn, Fe, Co); B"=(Ti, V, Cr, Ni, Zn, Pb, Sb, W, Zr); B'"=(Cu, Bi); x=0-0.6 y=0-0.2; a=0-1 b=0-0.8.

With b=0, x=0 and y=0; the above generalized formula becomes $AB'_{1-a}B''_{a}$ and with A'=La, B'=Co and B"=Ni; the formula becomes $LaCo_{1-a}Ni_aO_3$. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use LCN material in the central layer or as a combination to other layers as taught by Tietz in the contact material of Schmidt in order to have improved sinterability.

6. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (DE 19627504) (This is a foreign reference and the examiner relies on verbal translation) as applied in claim 8 and in view of Tietz et al (US 2004/0047789 A1).

Regarding claims 18-20, Schmidt discloses that the layer of the contact material comprises a perovskite $LaCoO_3$. Schmidt remains silent doping cobalt with transitional metal nickel. However, Tietz discloses a electrically conductive

contact material for a fuel cell where the material is describe in a generalized formula as

$A'_{1-x-y}\ A''_x\ B'_{1-a-b}\ B''_a\ B'''_b\ O_3$; Where A'=(Y, Sc, Ce, La, Pr, Nd, Sm, Eu, Gd); A"=(Mg, Ca, Sr, Ba); B'=(Mn, Fe, Co); B"=(Ti, V, Cr, Ni, Zn, Pb, Sb, W, Zr); B'"=(Cu, Bi); x=0-0.6 y=0-0.2; a=0-1 b=0-0.8.

With b=0, x=0 and y=0; the above generalized formula becomes $AB'_{1-a}B''_a$ and with A'=La, B'=Co and B"=Ni; the formula becomes $LaCo_{1-a}Ni_aO_3$ and the metal lattice is $Co_{1-a}Ni_a$ which is equivalent to $Co_{1-y}Ni_y$.

With a=0.4, b=0, y=0; above geneneralized formula $A'_{1-x-y}\ A''_x\ B'_{1-a-b}\ B''_a\ B'''_b\ O_3$ becomes $A'_{1-x}\ A''_x\ B'_{0.6}\ B''_{0.4}\ O_3$ and with A'=La, A"= transition metal, B'=Co and B"=Ni; it becomes $La_{1-x}\ A''_x\ Co_{0.6}\ Ni_{0.4}\ O_3$ which is equivalent to $La_{1-x}\ E_x\ Co_{0.6}\ Ni_{0.4}\ O_3$ [Abstract; paragraphs 0016-0026].

The material produced by using dopants is electrically conductive and usually has a significantly improved sinterability by comparison with conventional ceramics [paragraph 0025]

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to dope with transition metal in order to have improved sinterability.

7. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (DE 19627504) (This is a foreign reference and the examiner relies on verbal translation) as applied in claim 16 and further in view of Ghosh et al (US 2002/0122971 A1).

Regarding claims 21-22, Schmidt remains silent about electrode material. However, Ghosh teaches electrode materials for fuel cell comprising yttria stabilized zirconia and noble metal palladium to provide good thermal stability where the electrode is subjected to thermal cycling [paragraph 0058]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize electrode materials comprising yttria stabilized zirconia and noble metal palladium as taught by Ghosh in the fuel cell stack of Schmidt in order to provide better thermal stability of the fuel cell stack.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 8-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 10 of U.S. Patent

No. 7,190,568 B2 (hereinafter '568). Although the conflicting claims are not identical, they are not patentably distinct from each other. Applicant's claims are broader and read on the claims of '568. Applicant's "twice as large as the average diameter" reads on "1.5 times the average diameter"; "particles having a diameter of greater than about 2 μm" reads on "particles having a diameter of greater than about 1.5 μm" of '568.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MUHAMMAD SIDDIQUEE whose telephone

number is (571) 270-3719. The examiner can normally be reached on Monday-Thursday, 7:30 am to 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS

/PATRICK RYAN/
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